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Physics research at Lund University in Sweden.

## HIGHER EDUCATION AND RESEARCH:

# Getting smarter in Sweden

More and more people want to pursue higher education in Sweden. The number of applicants for full-time studies has increased by almost 85,000 over the past five years. In terms of research, Sweden's aim is to be one of the most R&D-intensive countries in the world.

In the fall of 2010, a total of 374,000 people applied for admission to universities and university colleges, an increase of 4 percent from 2009. Of the 374,000 applicants, 240,000 were admitted. Higher education in Sweden is financed largely by tax revenue. Until now, this has applied to all students regardless of their nationality. From 2011, however, tuition fees will be introduced for students from outside the EU/EEA and Switzerland. The Government believes that Swedish higher education should compete in terms of quality and good conditions, not just by providing free education.

### Grants should attract students

To enable students who cannot pay tuition fees to study in Sweden, the Government has allocated resources for two new scholarship programs. One of

these, totaling SEK 30 million a year, awards grants through the Swedish Institute. Aimed at highly qualified students from countries with which Sweden has long-term development projects, it is designed to cover both living costs and tuition fees. The other program is aimed at highly qualified students from countries outside the EU or EEA.

### Responsibilities and targets

Grants in this second program are intended to cover tuition fees and are awarded through the International Program Office for Education and Training to universities and university colleges that already give grants to students.

In Sweden, the Riksdag (parliament) and government have overall responsibility for higher education and research, which means that they make decisions about targets, guidelines and the alloca-

tion of resources. Education and research fall under the scope of the Ministry of Education and Research.

The Swedish National Agency for Higher Education is the central government agency responsible for matters concerning higher education, but universities and university colleges are separate government entities and make their own decisions about the content of courses, admissions, grades and other related issues. Research in Sweden is financed and promoted primarily by the Swedish Research Council.

### Aims of higher education

The aims of higher education are governed largely by the Swedish Higher Education Act and the Higher Education Ordinance. They specify that all education at universities and university colleges should be based on scientific principles.

**LEARN MORE****MORE PEOPLE WITH FOREIGN BACKGROUNDS**

In the 2008/09 academic year, there were 12,400 Swedes with a foreign background among students starting studies at a university or university college, an increase of 7 percent over the previous year.

The percentage of Swedish students with a foreign background varies considerably between courses. Among the degree courses, the pharmacy Bachelor's program had the highest percentage of students with a foreign background, at 69 percent. The Master's program for pharmacists and the biomedical laboratory degree program also had a high percentage. In degree programs for agricultural and forest studies, only 3 percent of students had a foreign background.

**FINANCIAL ASSISTANCE FOR STUDENTS**

All Swedish students who study at a university or university college are entitled to financial assistance, which consists of a grant component and a loan. Repayment of the loan is income-dependent, with the loan to be repaid by the student's 60th birthday.

For citizens of the EU/EEA or Switzerland, EU regulations apply. Other foreigners who have a permanent residence permit in Sweden may be entitled to Swedish financial assistance for studies both in Sweden and abroad.

**MOST STUDENTS ARE WOMEN**

In the mid-1940s, the percentage of women in undergraduate programs was 20 percent. Over the past few decades, the situation has changed dramatically — the percentage of women is now about 60 percent. In the fall of 2009, the breakdown was 57 percent women and 43 percent men.

More detailed information can be found in *Swedish Universities and University Colleges: Short Version of Annual Report 2010*; download at [www.hsv.se](http://www.hsv.se)

Education should provide:

- Knowledge and skills in the relevant areas.
- An ability to make independent critical assessments.
- An ability to identify, formulate and solve problems.
- Preparedness for changes in the student's professional life.

Universities and university colleges have to ensure that students with disabilities have the same opportunities for study as other students.

**Greater freedom**

A reform introducing greater autonomy will come into effect January 1, 2011. More freedom will allow Sweden's universities and university colleges to perform better in a highly competitive international sector. Among other changes, the reform provides universities and university colleges with more powers to determine their own internal structures. Two principles must always be observed: decisions that require an expert opinion must be

made by two people with scientific or artistic expertise, and students are entitled to representation when decisions relating to education or student issues are made.

A new quality assurance system is being introduced in conjunction with the reforms, to improve results in degree programs. Universities and university colleges with higher quality degree programs will be given increased funding. Evaluation will be carried out by the Swedish National Agency for Higher Education.

**Funding**

Eighty percent of funding for Sweden's universities and university colleges comes from the government, with 65 percent of this coming in direct government grants. A further 7 percent comes from other public sources of funding, which means that almost 88 percent of financing is in the form of public funds. The remaining funding comes from private sources and financial revenue. For 2009, the total cost for universities and university colleges was SEK 54.1 billion. ■



PHOTO: PLATFORM/JOHNER

Students at the university library in Stockholm.

## New admission rules

Admission to a Swedish university or university college is dependent on specific qualifications. If there are more applicants than openings, a selection is made from among those qualified.

To meet general admissions requirements for a university or university college, students must have a school-leaving certificate from a high school or municipal adult education program in Sweden or have completed high

school education outside Sweden.

Studies at a "folkhögskola" (adult further education program) can also qualify students for higher education.

In the fall of 2010, new admission rules and a new selection system came into effect. One change concerns "credit increments," which applicants can earn if they have taken advanced courses at high school, such as in mathematics or in any foreign languages.

**LEARN MORE**

**HIGH PERCENTAGE OF GDP**

The cost of universities and university colleges in 2009 represented 1.7 percent of Swedish gross domestic product (GDP). The cost of research that year was 3.61 percent of GDP. Sweden was the top-ranking country in the EU in that respect.

**UNIVERSITIES AND UNIVERSITY COLLEGES**

There are 14 public universities and 21 public university colleges in Sweden. There are also a number of independent institutions of higher education. The Government allows three of them, Chalmers University of Technology in Gothenburg, the Stockholm School of Economics and Jönköping University, to offer instruction at all levels as well as a variety of vocational qualifications.

As of January 1, 2010, all independent institutions of higher education are allowed to apply for accreditation to award general degrees at the research level. Applications are considered by the National Agency for Higher Education.

**MANY WANT TO BECOME TEACHERS**

The teacher program remains the most popular, with some 15,000 applicants ranking this as their first choice of studies for the fall 2010 semester. The Master of Science in Engineering program had about 10,600 applicants identifying the program as their first choice of studies, a decrease of 3 percent over the preceding fall semester. Next is the nursing program, with about 9,500 first-choice applicants, an increase of 7 percent.



PHOTO: JOHNER



PHOTO: JOHAN JEPSSON

The Bologna Declaration makes it easier for European students to study abroad.

## Shared goals across Europe

The Swedish system of higher education has changed significantly in recent years as a result of what is known as the Bologna Process. The aim is to create an integrated European Higher Education Area (EHEA).

The Bologna Declaration derives its name from a meeting held in Bologna in 1999. A declaration signed there by 29 countries makes it easier for students and university graduates seeking jobs to move across national borders within Europe. More than 40 countries have signed up to the agreement. Its three goals are to:

- Promote mobility.
- Promote employability.
- Promote Europe's competitiveness as an education continent.

For Sweden, the Bologna Process has led to the Swedish Riksdag voting to ratify the Lisbon Convention, which entails reciprocal recognition of degrees in other countries. Another result is that everyone who earns a university degree receives a diploma

supplement, which makes it easier to use the degree abroad for further studies or employments.

**New structure**

As part of adapting its higher education system to the rest of Europe's, Sweden introduced a new structure for education and degrees with three levels, starting in 2007. All higher education programs were divided into Bachelor, Master and research levels. Each level requires that students have a degree from the preceding level of study. The new system is compatible with the European Credit Transfer System (ECTS).

Read more about how the system is structured on the Swedish National Agency for Higher Education's website, [www.hsv.se](http://www.hsv.se) ■

## Greater revenue

University and university college revenue for research and education at the research level was almost SEK 30 billion in 2009, an increase of 1.9 billion or 7 percent over the preceding year.

A substantial rise in government funding for research during the four-year

period 2009-2012 accounts for much of the increase, but there was a similar rise in funding from external bodies.

The EU also contributed to a greater extent than previously. In 2009 higher education institutions received EU funding of about SEK 1.3 billion.

**DID YOU KNOW?****WELL-EDUCATED POPULATION**

Thirty percent of the Swedish population between 30 and 64 has the equivalent of a Bachelor's degree, representing three years of full-time study.

**THE NUMBER OF TEACHERS IS ON THE RISE**

In 2009, the number of teachers and researchers working at universities and university colleges rose by 5 percent, reaching 25,000 for the full year. The largest number of teachers and researchers worked in the social sciences.

**MORE FEMALE RESEARCHERS**

Over the past ten years, the percentage of women among teachers and researchers has increased from 35 percent to 42 percent. The proportion of women is lowest among professors, but even here the numbers are rising and reached 20 percent in 2009.



PHOTO: HANS BJURLING/MAGEBANK

**Other useful links**

[www.programkontoret.se](http://www.programkontoret.se) The International Program Office for Education and Training  
[www.studyinsweden.se](http://www.studyinsweden.se) The portal of Swedish higher education  
[www.sweden.gov.se/education](http://www.sweden.gov.se/education) The Ministry of Education and Research  
[www.tillvaxtanalys.se](http://www.tillvaxtanalys.se) The Swedish Agency for Growth Policy Analysis  
[www.vhs.se](http://www.vhs.se) The National Agency for Services to Universities and University Colleges

**Major investments in R&D**

Sweden aims to be a leading research country and one of the most R&D-intensive countries in the world, and to have research that is both broad and specialized.

Sweden allocates almost 4 percent (about USD 1,100 per capita) of GDP to research and development, which has led to the country taking a leading position in several areas. One is environmental technology, particularly the treatment of emissions and toxic substances in production and manufacturing processes. Sweden also has a high level of expertise in nanotechnology research, where several major Swedish companies — including ABB, Sandvik and Högånäs — have become market leaders.

In a bid to improve Sweden's competitive edge, the Swedish Government makes considerable investments in research and innovation during 2009-2012. About SEK 110 billion are earmarked for this purpose.

The bulk of Swedish research, 75 percent, is financed by companies. For research at universities and university colleges, the government is the largest source of funding. The most important sources of government financing for research apart from direct grants are research councils and other agencies.

There are four government bodies that primarily fund research:

- The Swedish Research Council. Allocated about SEK 4 billion in 2009 in the natural sciences, technology, medicine, humanities and social sciences. [www.vr.se](http://www.vr.se)
- Formas, the Swedish Research Council

for Environment, Agricultural Sciences and Spatial Planning. Allocated about SEK 850 million in 2009 for the environment, agricultural sciences and spatial planning. [www.formas.se](http://www.formas.se)

- FAS, the Swedish Council for Working Life and Social Research. Allocated about SEK 400 million in 2009 for labor market issues, work organization, work and health, public health, welfare, social services and social relations. [www.fas.forskning.se](http://www.fas.forskning.se)
- VINNOVA, the Swedish Agency for Innovation Systems. Allocated about SEK 1.4 billion in 2009 primarily for research into technology, transportation, communication and working life. [www.vinnova.se](http://www.vinnova.se)

There are several foundations that fund research, an important complement to government funding. In 2009, private foundations gave about SEK 1.3 billion to research. The largest research foundations are: [www.stratresearch.se](http://www.stratresearch.se) SSF, the Swedish Foundation for Strategic Research. [www.mistra.org](http://www.mistra.org) Mistra, the Foundation for Strategic Environmental Research. [www.kks.se](http://www.kks.se) The Knowledge Foundation. [www.ostersjostiftelsen.se](http://www.ostersjostiftelsen.se) The Foundation for Baltic and East European Studies. [www.vardal.se](http://www.vardal.se) The Vårdal Foundation. [www.stint.se](http://www.stint.se) STINT, the Swedish Foundation for International Cooperation in Research and Higher Education. ■

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